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Department for Health
Faculty of Humanities and Social Sciences

Greatest Sporting Cities 2016
Research Report

A report prepared for ESPN Sports Media Limited

by

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EXECUTIVE SUMMARY

The present report summaries the findings of a project commissioned by ESPN Sports Media Limited to inaugurate the UK's Greatest Sporting City 2016. Here, our schedule of work specifically determined, using a statistical composite of indicators derived from factors established in 2015 (Parker, Sarkar, & Curran, 2015), a ranking of the UK's greatest sporting city 2016.

The project had two objectives:

- 1) Data collection: Engage in an in-depth data mining and consultation period with sports fans to measure and rank-order the indicators of our ranking; a set of factors established as being central to a great UK sporting city.
- 2) Data analysis: Transform, weight, and aggregate the indicators to yield an overall composite index for the UK's greatest sporting city 2016.

A statistical construction of a composite indicator reflecting factors that encapsulate a Great Sporting City was employed to facilitate these objectives. This process comprises quantitative data collection and analysis. Data were collected via a combination of: (a) data mining for freely available information; and (b) a survey soliciting fan satisfaction with factors associated with a Great Sporting City. The collected data were analyzed using a weighted ranking of composite indicators.

Key Findings

Leicester is ESPN's Greatest Sporting City 2016

Leicester emerged as ESPN's Greatest Sporting City 2015, rising 17 places from 18th in 2015. This achievement owed much to the incredible performance of its football team, Leicester City, in winning the Premier League. The city's Rugby team, the Leicester Tigers, similarly had a good season and collectively these performance meant that Leicester finished top in the results/success factor. Relatedly, fan satisfaction was also extremely high, with Leicester finishing top in 4 of the 5 subjective factors where fan perceptions were solicited (*viz., local talent, atmosphere, community, and social/match day experience*). The performance of Leicester is very much commensurate with the big sporting story of 2016 – that of the success of the city's

football team. This success seems to have very much over spilled into general satisfaction with the city's sporting performances. Even more impressively, its overall performance ensured that the city had enough to beat a number of city powerhouses in sport, London, Manchester, Liverpool, and Glasgow, into 3rd, 2nd, 4th and 6th place respectively.

Glasgow top Scottish city

Glasgow emerged as the top Scottish sporting city in our analysis for the second year running, ranking 6th overall. This should come as no surprise given the dominance of Celtic and Rangers football clubs meaning that Glasgow is rich in sporting history (and indeed finished top on this factor).

Cardiff top Welsh city

Cardiff was the top Welsh city, ranking 7th overall, up 3 places from 2015. Not surprisingly, Cardiff's top ten finished owed a lot to its high score on venues (1st overall). It also ranked inside the top quarter of cities on participation and value for money.

Leeds finishes top in the North and North East

Leeds emerges as the top city in the North and North East region placing 5th overall (no change from 2015). Leeds' performance was largely a function of the very good recent results of Leeds Rhinos (winners of the Challenge Cup and Super League) and Yorkshire County Cricket Club (winners of the County Championship). The city also performed well on its value for money, choice, and sporting history.

Manchester top North West city for second year running

Manchester placed 2nd overall (down 1 from 2015) and finished as the best sporting city in the North West for the second year running. This achievement owed much to its consistent performance, where it placed in the top quarter of cities for 7 of the 12 factors. It also finished top for the transport factor. The performance is commensurate with the sporting reputation of Manchester, which houses two of the top English football teams (Manchester City and Manchester United) who both won domestic trophies in 2016, and a number of successful Rugby clubs (Sale, Widnes, and St Helens). Its overall performance ensured the city had just enough to squeeze the other 'big' sporting city, Liverpool, into 2nd place in the North West (Liverpool placed 4th overall)

Birmingham ranks only 13th (but is still top city in the West Midlands)

England's second city, Birmingham, emerged from our analysis in what might be considered a disappointing 13th place. Though this is up 4 places from 2015, fan satisfaction with the city was modest and it hovered around mid-table for the fan survey factors (viz. local talent, atmosphere, community, transport, and social). In addition, the city performed poorly on the economic impact, participation, and success factors (bottom 3rd of cities).

London top city in the South and South East

The Capital, London, placed 3rd in this year's ranking – 1 place lower than in 2015. London's professional clubs continued to perform well in history and recent success. However, it scored poorly on choice and venues (both adjusted for population size). Nonetheless, London still finished as the top city in the South and South East for the second year running. In this region, Southampton also placed highly at 11, up 3 places from 2015. Brighton and Portsmouth also placed inside the top 20 at 14th and 19th respectively.

Bristol best in South West but no cities in top 15

A disappointing year for the South West, none of its cities made the top 15. Bristol was the best South West city, finishing 16th, 9 places lower than in 2015. This was primarily due to the relative lack of success for the professional sports clubs in the city compared to last year (Bristol ranked top on success in 2015).

Blackpool finishes bottom (again)

Blackpool emerged from our analysis as the bottom placed city for the second year in a row. This poor showing was largely due to high levels of fan dissatisfaction displayed by the survey factors (bottom in all but 2). Blackpool also scored poorly on choice, history, value for money, and success.

Leicester top football city

Unsurprisingly, Leicester finished the year as the top football city. This is mainly due to the success of Leicester City in winning the Premier League title – but the fan satisfaction was also very high. The other big football cities of Liverpool, Glasgow, and Manchester follow close behind in 2nd, 3rd and 4th respectively.

Leeds top cricket city

The success of Yorkshire County Cricket Club in 2016 (County Champions) ensured that Leeds was the top cricket city of 2016. The other big cricket cities of Manchester and London follow close behind in 2nd and 3rd.

Cardiff top rugby union city

Cardiff emerged in our analysis as the top rugby union city of 2016. The national venue in Cardiff (Millennium Stadium) ensured that the city scored well on atmosphere (1st) and social/match day experience (1st). Cardiff Blues also offer very good value for money, and the fans appreciated the clubs emphasis on local talent. London finished close behind in 2nd for Rugby Union, owing largely to the success of Saracens (European Rugby Champions Cup and Aviva Premiership winners).

Leeds top rugby league city

Leeds placed as the top rugby league city in 2016. This was mainly due to the success of Leeds Rhinos, who won the Super League and Challenge cup. The recent good form of Wigan Warriors ensured that Wigan were not far behind in second place.

1. INTRODUCTION

The present report summarizes the findings of a project commissioned by ESPN Sports Media Limited to inaugurate the UK's Greatest Sporting City 2016. Here, our schedule of work specifically determined, using a statistical composite of indicators derived from factors established in 2015 (Parker, Sarkar, & Curran, 2015), a ranking of the UK's greatest sporting city 2016. It is anticipated that the results of the study will generate discussion and debate amongst sports fans and other interested parties.

The project had two objectives:

1. Data collection: Engage in an in-depth data mining and consultation period with sports fans to measure and rank-order the indicators of our ranking; a set of factors established as being central to a great UK sporting city.
2. Data analysis: Transform, weight, and aggregate the indicators to yield an overall composite ranking for the UK's greatest sporting city 2016.

2. METHODOLOGY

The project employed a period of quantitative data collection and analysis to measure a number of indicators that together make up a composite index of ESPN's greatest sporting city 2016. This methodology is formally known as constructing a composite indicator (Rovan, 2014). Composite indicators, which compare units of analysis (e.g., cities, countries, institutions, etc.) on certain metrics of performance (e.g., health, wealth, equality, etc.), are an extremely useful tool for policy analysis and public communication (OECD, 2008). With their emphasis on benchmarking performance, composite indicators are increasingly being employed to rank cities, countries, or institutions on important economic, social, and policy outcomes (Freudenberg, 2003). Indeed, the number of high-profile rankings derived from composite indicators has proliferated year-on-year (see Bandura, 2008). These include, for example, the Times Higher Education's World University Ranking, the United Nations' Human Development Index, and the World Economic Forum's Global Gender Gap.

In being able to integrate a large amount of diverse information, composite indicators are a

valuable methodological tool for our project that seeks to rank UK cities on a number of factors that make up a great sporting city. This said, the construction of a composite indicator is not straightforward methodologically, and can be subject to misinterpretation and/or manipulation. Naturally, then, questions of the accuracy, reliability, and appropriateness of our composite indicator need to be addressed fully. In what follows, we detail each step of our data collection and analysis to document the procedures that took place to establish the composite indicator underpinning ESPN's 2016 greatest sporting city ranking.

Objective 1: Engage in an in-depth data mining and consultation period with sports fans to measure and rank-order the indicators of our ranking; a set of factors established as being central to a great UK sporting city.

In February 2015 a research team including the first author conducted 8 focus groups from a cross-section of major cities from each region of the UK¹ (Bristol, Glasgow, Birmingham, London, Cardiff, Manchester, Leeds, and Belfast). Each focus group consisted of 8-10 sports fans and was guided by a pre-determined interview schedule tapping into factors that comprised a 'great sporting city'. A detailed methodology and overview of the findings from this scoping exercise can be found in the 2015 report of ESPN's greatest sporting cities (Parker et al., 2015). In short, 12 indicators (termed 'factors') of a 'great sporting city' emerged in the focus groups. These were; value for money, participation, local talent, atmosphere, community, transport, recent results/success, social/match day experience, venues, choice, history, and economic impact. These factors, and their measurement, are described in detail under the sub heading of *Factor Measurement and Weighting* in Section 3 of this report ('Data Analysis'). For reference, though, we provide an overview of the factors and their measurement in Table 1.

Given the heterogeneity of the factors identified as important to a 'great sporting city', a number of measurement issues had to be reconciled. Most notably, while some of the factors are necessarily objective in their nature (i.e., value for money, participation, venues, choice, history, and economic impact), others rely on either a mixture of subjective perception and objective information (i.e., success) or subjective perception only (i.e., local talent, atmosphere, community, transport, and social/match day experience). Moreover, not all factors were created equal, and some of the indicators emerged in the focus groups as more important than others

¹ The 8 UK regions comprise: (1) North West (England); (2) North East (England); (3) Midlands (England); (4) South East (England); (5) South West (England); (6) Scotland; (7) Wales, and (8) Northern Ireland.

(e.g., success vs community). In May 2016, we therefore embarked on an in-depth consultation period with sports fans to measure; (a) subjective perceptions of satisfaction with the identified factors and, (b) a rank-order of the most important factors. This consultation period encompassed the distribution of an online questionnaire to fans in the cities identified as units of analysis for our composite indicator (see below *City Selection* sub-heading in Section 3, ‘*quantitative data analysis*’). During this time, we collected the objective data, and these procedures are outlined below. This process of initial fan consultation and data mining and consultation period ceased in June 2016.

Table 1. Factors and their measurement

Factor	Measurement
<i>Value for Money</i>	This factor was measured by the ratio of the lowest home adult ticket price to median weekly wage for the professional football, rugby union, rugby league and cricket clubs in a given city.
<i>Participation</i>	This factor was measured by the percentage of adults participating in sport at least once a week (data from the Active People Survey, 2014, Sport Scotland, 2006, and the Active Adults Survey, 2009).
<i>Local Talent</i>	This factor was measured by fan satisfaction with the opportunity of young people to play for their local sports teams.
<i>Atmosphere</i>	This factor was measured by fan satisfaction with the sporting atmosphere and culture of their city.
<i>Community</i>	This factor was measured by fan satisfaction with club community involvement in their city.
<i>Transport</i>	This factor was measured by the satisfaction of fans with the transport links to and around their city’s sporting venues.
<i>Club(s) Success/Results</i>	This factor was measured by a combination of fan satisfaction with the success of the professional football, rugby union, rugby league and cricket clubs (25%) and the average win:loss ratio of the professional football, rugby union, rugby league and cricket clubs (75%) in a given city.
<i>Social/Match day Experience</i>	This factor was measured by the fan satisfaction with the social and match day experiences for sporting events in their city.
<i>Venues</i>	This factor was measured by the ratio of aggregate sports venue capacity in a given city to its population.
<i>Choice</i>	This factor was measured by the population adjusted number of professional football, rugby union, rugby league and cricket clubs in a given city.
<i>Sporting History</i>	This factor was measured by the aggregate historical major trophy haul of the professional clubs in a given city.
<i>Economic Impact</i>	This factor was measured by the percentage of people employed in the sports industry in a given city (data from Sport England and BRES, 2013).

Objective 2: To weight the key factors, calculate the overall scores for the cities, and rank them accordingly

In June 2016, the research team analysed the data from the survey to assign factor weightings by a combination of rank-order importance and measurement accuracy (i.e., objective vs subjective). The full methodology for this weighting assignment can be found in under the *Factor Measurement and Weighting* sub-heading in Section 3 (*'quantitative data analysis'*). Once the weightings were assigned, the process of weighted-ranking began for the overall composite indicator. This comprised four stages:

- (1) The raw data for the factors for each city were collected and placed in a database (e.g., fan satisfaction with sporting atmosphere, club success, history, etc.).
- (2) Since the data differed qualitatively from factor to factor, the research team transformed the raw data onto a standardized 100-point scale. Once the data had been transformed to a common metric, each raw data point conformed to a uniform scale and was therefore interpretable.
- (3) The transformed score was subsequently weighted by multiplying it by a coefficient that corresponded to its factor weighting.
- (4) The transformed and weighted scores for all factors were then aggregated to form an overall composite index for the city in question. These totals were then used to order-rank the cities.

Having briefly outlined the overall design of the research underpinning the study, it is to the composite indicator analysis that our attention now turns.

3. DATA ANALYSIS

As noted above, we systematically identified the key themes emerging from the fan focus groups in 2015 (Parker et al., 2015). These themes fed directly into the factors described below, which are considered important indicators of a 'great sporting city'. In what follows, we outline the composite indicator methodology through which the ranking of cities was determined. This process was completed in five discrete stages. First, a list of cities was created for inclusion in the overall composite indicator. Second, we generated questions for an online survey that solicited fan perceived satisfaction on each of our 12 factors (indicators) identified. Third, we used the fan survey results to apply weightings to the factors to establish the relative influence of each

indicator in the overall composite index. Fourth, we used a combination of fan survey data and objective data from freely available sources, to measure each factor. Fifth, using the weighting and measurements in stages 3 and 4, we calculated the overall ranking. Below we describe each of these stages in detail.

Stage 1: City Selection

There were a number of key stages in the city selection:

- 1) We took the latest Office of National Statistics (ONS) population figures (Annual Mid-year Population Estimate, June, 2015) and, where necessary the 2011 Census population figures, and deemed that a population of > 130,000 was an appropriate cut-off.²
- 2) Next, we removed any metropolitan areas that could not be classed as a city from the ONS population figures (e.g., Isle of Wight, Neath Port Talbot).
- 3) Next, we removed feeder cities to London (e.g., Slough, Wycombe), Manchester (e.g., Bury, Rochdale) and Leeds (e.g., Wakefield, Castleford), which are served by their larger metropolis.
- 4) Finally, we removed a number of smaller cities on the basis that they have no professional football, rugby union, rugby league, or cricket clubs and therefore would be redundant in any analysis (i.e., nothing to score on; Warwick, Bridgend).

This process led to the final list of 49 cities that went forward for analysis.

Stage 2: Fan Survey

Having selected our cities, we then created the questions for an online survey to be distributed to sports fans within those cities between 1st June 2016 and 18th July 2016. Before embarking on this fan consultation period, though, we knew that we would be able to collect data on 7 factors from freely available ‘objective’ data sources (viz., *value for money*, *participation*, *venues*, *choice*, *sporting history*, and *economic impact*), whereas we would rely on either a combination of ‘objective’ data sources and ‘subjective’ fan perceived satisfaction data (viz., *success*) or only

² The single exception to this rule was Exeter, which has a marginally smaller population than 130,000 (124,328), but that we deemed an important sporting city given the success and high profile influence of its rugby team, the Exeter Chiefs.

‘subjective’ fan perceived satisfaction data for the remaining factors (viz., *local talent, atmosphere, community, transport, and social/match day experience*). Hence, the survey had two main aims. First, we wanted to solicit fan perceived satisfaction for each of the factors that we relied upon subjective data (i.e., *local talent, atmosphere, community, transport, and social/match day experience, and success*). Second, we asked each fan to rank all of the factors in order of importance (i.e., both objective and subjective) so that we could use this importance data as input in weighting calculations for our overall composite indicator. The relative weighting for each factor is listed in the *Factor Measurement and Weighting* section below. The demographics of the fan survey data can be found in Table 2.

Table 2. Demographics of the fan survey

City	Gender			Age						
	Total <i>n</i>	M	F	< 18	18-24	25-34	35-44	45-54	55-64	> 65
Aberdeen	104	69	35	1	6	14	25	23	26	9
Barnsley	64	36	28	2	4	14	13	7	16	8
Bath ¹⁰	77	47	30	-	7	11	13	14	16	16
Belfast	101	63	38	1	6	14	21	25	23	11
Birmingham ⁸	141	75	66	1	17	36	24	25	23	15
Blackburn ¹⁷	98	56	42	1	8	15	22	23	19	10
Blackpool	75	47	28	1	4	9	15	20	17	9
Bolton	97	54	43	3	8	21	20	21	13	11
Bournemouth ¹²	100	58	42	2	9	16	19	15	13	26
Bradford ¹¹	110	70	40	-	9	20	13	26	19	23
Brighton ⁹	102	53	49	-	10	13	17	22	18	22
Bristol	116	74	42	1	8	25	20	29	19	14
Cardiff	118	65	53	-	8	28	22	22	25	13
Gloucester ⁶	90	55	35	-	4	15	19	22	15	15
Edinburgh	124	74	50	-	5	22	21	30	28	18
Coventry	104	63	41	1	10	19	9	22	28	15
Derby	109	62	47	1	8	21	18	16	24	21
Doncaster	102	53	49	2	6	21	18	26	16	13
Dundee	101	61	40	2	5	19	15	23	21	16
Exeter	102	61	41	-	5	18	15	24	20	20
Glasgow	126	81	45	-	4	19	22	27	37	17
Ipswich	92	44	48	2	8	13	22	20	15	12
Hull	102	50	52	1	10	11	15	17	28	20
Leeds ⁵	125	82	43	-	12	23	17	34	23	16
Leicester	112	77	35	2	6	24	22	22	16	20
Liverpool ³	110	79	31	-	7	19	18	27	22	17
London ¹	280	241	39	3	27	80	49	39	55	27
Luton	62	41	21	3	3	8	14	15	8	11
Manchester ⁴	135	104	31	-	7	23	23	28	29	25
Middlesbrough ¹⁵	87	58	29	1	4	11	18	14	22	17
Milton Keynes	109	71	38	1	15	13	21	19	23	17
Newcastle ⁷	125	76	49	1	7	22	24	19	32	20
Northampton	103	62	41	-	2	23	14	26	20	18
Norwich	110	65	45	1	7	17	20	20	22	23
Nottingham	121	72	49	-	11	20	22	31	18	19
Oxford	83	49	34	1	7	25	14	9	19	8
Peterborough	106	62	44	1	8	20	20	11	29	17
Plymouth	107	60	47	-	8	18	16	22	28	15
Portsmouth	105	71	34	3	4	15	25	15	27	16
Preston	106	67	39	-	9	20	17	21	20	19
Reading ²	99	67	32	1	5	9	15	21	24	24

Sheffield	118	74	44	-	6	22	21	26	28	15
Southampton ¹³	113	68	45	1	11	22	16	16	28	19
Stoke-on-Trent	106	61	45	2	11	15	20	16	25	17
Sunderland ¹⁶	102	53	49	1	6	19	16	21	29	10
Swansea	106	61	45	-	5	14	18	24	24	21
Swindon	108	65	43	2	7	22	19	20	23	15
Wigan	72	38	34	-	7	9	8	18	19	11
York ¹⁴	104	65	39	-	4	20	17	21	23	19

Note: ¹Includes Inner and Greater London; ²Includes Wokingham; ³Includes Tranmere, Widnes and St Helens; ⁴Includes Rochdale, Altringham, Oldham, Sale, Leigh, and Swinton; ⁵Includes Castleford; ⁶Includes Cheltenham; ⁷Includes Gateshead; ⁸Includes Wolverhampton, West Bromich, Walsall, and Moseley; ⁹Includes Hove; ¹⁰Includes North East Somerset; ¹¹Includes Keightley; ¹²Includes Poole; ¹³Includes Eastleigh; ¹⁴Includes Harrogate; ¹⁵Includes Stockton; ¹⁶Includes Durham; ¹⁷Includes Darwen and Accrington. Total $n = 5,271$.

Stage 3: Factor Weighting

From the fan survey, we obtained fan satisfaction ratings that are the basis for the measurement of our 6 ‘subjective’ factors described in detail below (i.e., *local talent*, *atmosphere*, *community*, *transport*, and *social/match day experience*, and *success*). Importantly, we also obtained a set of order-ranked importance data, which we used to inform the weighting of the factors in the overall composite index.

The procedure employed for arriving at the weightings for the factors in this 2016 analysis differ from those we employed in 2015 (see Parker et al., 2015). Here, the 2016 composite indicator weighted different factors according to both fan reported rank-order of importance, and the nature of the measured data (i.e., objective vs subjective). We did so to consider the superior accuracy of objective information relative to subjective information, which is prone to sampling error. Based on the available data, then, our ranking assigned a “star” rating to each factor, using one, two, or three stars (“★,” “★ ★,” or “★ ★ ★”) to denote low, moderate, or high importance (Table 3). A one-star factor was an indicator measured using subjective data, which less than 5% of fans in the survey ranked as most important to a ‘great sporting city’. A two-star factor was an indicator that had either; (a) more than 10% of fans ranking it as most important to a ‘great sporting city’ and was measured using subjective data, or (b) had more than 5% of fans ranking it as most important to a ‘great sporting city’ and was measured using objective data. A three-star factor was an indicator measured using objective data, which had more than 10% of fans ranking it as most important to a ‘great sporting city’.

We assigned a weight of 1, 2, or 3 to each factor in concordance with its star rating. We then determined that the proportionate point values 4.80, 9.50, and 14.25 would yield a total of 100 points when summed over the 12 factors (4.80 points x 5 factors, 9.50 points x 5 factors, 14.25

points x 2 factors = 100 points). These point values have been rounded to the nearest decimal point here, but exact values were used in the analysis.

Table 3. Factor weightings

Factor	Star	Weight	Objective?	> 10% 1 st preference	> 5% 1 st preference
Value for Money	★ ★ ★	14.25%	✓	✓	✓
Participation	★ ★	9.50%	✓	X	✓
Local Talent	★	4.80%	X	X	X
Atmosphere	★ ★	9.50%	X	✓	✓
Community	★	4.80%	X	X	X
Transport	★	4.80%	X	X	X
Club(s) Success/Results	★ ★ ★	14.25%	✓	✓	✓
Social/Match day experience	★	4.80%	X	X	X
Venues	★ ★	9.50%	✓	X	✓
Choice	★ ★	9.50%	✓	X	✓
Sporting History	★ ★	9.50%	✓	X	✓
Economic Impact	★	4.80%	✓	X	✓

Stage 4: Factor Measurement

In this stage of the overall analysis, we describe how we conceptualize and measure each of the factors that make up our composite index.

Value for Money (★ ★ ★)

Value for money was a key theme emerging from the focus groups as identified in 2015. We therefore retrieved data on the lowest full price adult home ticket from the professional football (men's and women's), rugby union, rugby league, and cricket clubs in each city. We then averaged these prices for all the clubs. To control for regional variations in purchasing power, we divided the average lowest full price adult ticket in each city by its middle (median) weekly

per capita income using data from the Office of National Statistics (Annual Survey of Hours and Earnings, April, 2015). This function gave us the ratio of average full price lowest adult ticket price to median income.

Participation (★ ★)

Opportunities for sports participation was another strong theme to emerge from the fan focus groups in 2015. We therefore retrieved information regarding the participation of adults in sport for each city. These data came from the Active People Survey (2014) for the English cities, the Active Adults Survey (2009) for the Welsh cities, and Sport Scotland (2007) for the Scottish cities. The data we retrieved provided a percentage of adults who participated in sport *at least once a week*. This percentage thus provided an indication of the level of adult sports participation for each city.

Local Talent (★)

Opportunities in a city for ‘home grown’ local talent to flourish emerged as a theme across the fan focus groups in 2015. We measured this factor using data from the fan survey described in Stage 2. Here, fans were asked to respond to a local talent item (“How would you rate the opportunity for young sporting talent from your city?”) on a Likert scale from 1 (*Very Poor*) to 10 (*Very Good*). For each city, we took the mean response of the city’s participants on this item as the score for the local talent factor.

Atmosphere (★ ★)

Sporting atmosphere was another strong theme to emerge across the fan focus groups. As with local talent, we measured this factor using data retrieved from the fan survey described in stage 2. Here, fans were asked to respond to an atmosphere item (“How would you rate the professional sports clubs representing [INSERT CITY LIVE IN OR CLOSEST TO] in terms of providing opportunities for local athletes [e.g., high quality professional academies, effective talent pathways, emphasis on home-grown talent over imported talent, etc...]?”) on a Likert scale from 1 (*Very Poor*) to 10 (*Very Good*). For each city, we took the mean response of the city’s participants on this item as the score for the atmosphere factor.

Community (★)

Strong links between the local community and the sports clubs was perceived to be important to

focus group participants in 2015. We therefore measured this community factor using data from the fan survey. Here, fans were asked to respond to a community item (“How would you rate the links between professional sports clubs in [INSERT CITY LIVE IN OR CLOSEST TO] and the local community [e.g., community outreach, localized community feel, family friendly, etc...]?”) on a Likert scale from 1 (*Very Poor*) to 10 (*Very Good*). For each city, we took the mean response of the city’s participants on this item as the score for the community factor.

Transport (★)

Focus group participants in 2015 were consistent in their view that good transport to and from venues were crucial to a great sporting city. We therefore took data from the fan survey to measure this factor. Here, fans were asked to respond to a transport item (“How would you rate the transport links [e.g., train, car, bus, tram, etc...] servicing the sporting venues you have attended in [INSERT CITY LIVE IN OR CLOSEST TO]?”) on a Likert scale from 1 (*Very Poor*) to 10 (*Very Good*). For each city, we took the mean response of the city’s participants on this item as the score for the transport factor.

Club Success/Results (★ ★ ★)

The recent success of the professional clubs in a city was important for focus group participants in 2015. We therefore retrieved data on the win:loss ratio of the 12 month calendar period from June 2015 to June 2016 for the professional football (men’s and women’s), rugby union, rugby league, and cricket clubs in each city. For football, win:loss ratios for clubs in the Scottish and English Premier League, English Women’s Super League, Scottish and English Championship, Scottish and English League One, Scottish and English League Two, and the English Conference were retrieved. For rugby union, win:loss ratios for clubs in the English Premiership, Celtic Pro 12, and the English Championship were retrieved. For rugby league, win:loss ratios for clubs in the Super League and the Championship were retrieved. For cricket, win:loss ratios for the County Championship (1 & 2) and T20 Blast for all major counties were retrieved. Alongside the domestic win:loss ratios, we also retrieved win:loss ratios for the major European championships (viz., Men’s and Women’s Champions League; Europa league; Heineken Cup; Challenge Cup; World Club Series).

As the data contained various levels of competition within sports (i.e., Premier League and Championship) it was necessary to weight the win:loss ratios according to their relative standing

(so a win in the Champions League is worth more than a win in the Conference). The competition weights can be seen in Table 5. Following the calculation of the weighted average win:loss ratios, we then added a bonus weighting to the cities with a club(s) who had won a major trophy in the most recent completed season. The bonus weights can be seen in Table 5.

Table 4. Competition weightings for the club success factor

Competition	Weighting
Champions League (Football)	2.50
Women's Champions League (Football)	2.50
Heineken Cup (Rugby Union)	2.50
World Club Series (Rugby League)	2.50
Europa League (Football)	2.25
Challenge Cup (Rugby Union)	2.25
English Premier League (Football)	2.00
Celtic Pro 12 (Rugby Union)	2.00
English Premiership (Rugby Union)	2.00
Super League (Rugby League)	2.00
County Championship One (Cricket)	2.00
T20 Blast (Cricket)	2.00
English Championship (Football)	1.75
County Championship Two (Cricket)	1.75
Scottish Premier League (Football)	1.50
English League One (Football)	1.50
Scottish Championship (Football)	1.25
English League Two (Football)	1.25
Scottish League One (Football)	1.00
English Championship (Rugby Union)	1.00
English Championship (Rugby League)	1.00
English Conference (Football)	1.00
Women's English Super League (Football)	1.00

As success is also relative to the fan perception (e.g., a lower win:loss ratio for Bournemouth fans could be perceived more favorably than a higher win:loss ratio for Manchester United fans), we incorporated fan satisfaction to the success/results factor. To do so, we asked fans to respond to a success item in the fan survey ("How would you rate the recent sporting success of the professional [INSERT LIVE SPORT ATTENDANCE] clubs you have watched live over the past year?") on a Likert scale from 1 (Very Poor) to 10 (Very Good). For each city, we took the mean response of the city's participants on this item as the subjective score for the success factor. We then transformed both the objective win:loss data and the subjective fan data and calculated a weighted average, with the objective data assigned 75% and the subjective data assigned 25% of the success factor.

Social/Match day experience (★)

Another theme to emerge from the fan focus groups in 2015 was the quality of social opportunities and experiences for fans at sporting events. To measure this factor, we took data from the fan survey. Here, fans were asked to respond to a social item (“How would you rate the variety and quality of options [e.g., bars/pubs, shops, services, etc...] available at the [INSERT LIVE SPORT ATTENDANCE] matches you have attended over the past year?”) on a Likert scale from 1 (*Very Poor*) to 10 (*Very Good*). For each city, we took the mean response of the city’s participants on this item as the score for the social factor.

Table 5. Bonus weighting for major trophy (30% European cup, 20% domestic league title, 10% domestic cup)

City	National Venue(s)	Bonus Weighting
London	FA Cup (Arsenal); European Rugby Champions Cup (Saracens); Aviva Premiership (Saracens); Women’s Super League (Chelsea); Women’s FA cup (Chelsea)	1.90
Leicester	Premier League (Leicester)	1.20
Leeds	Challenge Cup (Leeds Rhinos); Rugby Super League (Leeds Rhinos); County Championship (Yorkshire)	1.50
Birmingham	T20 Blast (Birmingham Bears)	1.10
Glasgow	Scottish Premier League (Celtic)	1.20
Edinburgh	Scottish Cup (Hibernian)	1.10
Manchester	Manchester United (FA Cup); Manchester City (League Cup); T20 Blast (Lancashire Lightning)	1.30

Note: All other cities bonus weighted as 1.

Venues (★★)

The quality and capacity of the sporting venues servicing the cities emerged strongly as a focus group theme in 2015. The capacities of venues in a given city, though, are highly skewed by the population they service. Hence, this factor was measured using the ratio of the aggregate sporting venue capacity of the sporting venues in each city to the city population. To calculate this ratio, we retrieved data on the maximum capacities for the football, rugby union, rugby league, and cricket venues in each city and divided this aggregate by the city’s population using data from the Office of National Statistics (Annual Mid-Year Population Estimate, June, 2015). Cities housing national venues (e.g., Wembley, Murrayfield) were allocated a 20% bonus weighting per venue, on top of their ratio of aggregate venue capacity to population, to reflect the opportunity of fans in that city to view national events. In addition, we also assigned the same weights for venues used to host matches in the 2015 Rugby World Cup. These bonus weightings are displayed in Table 6.

Table 6. Bonus weighting for national venues including RWC venues

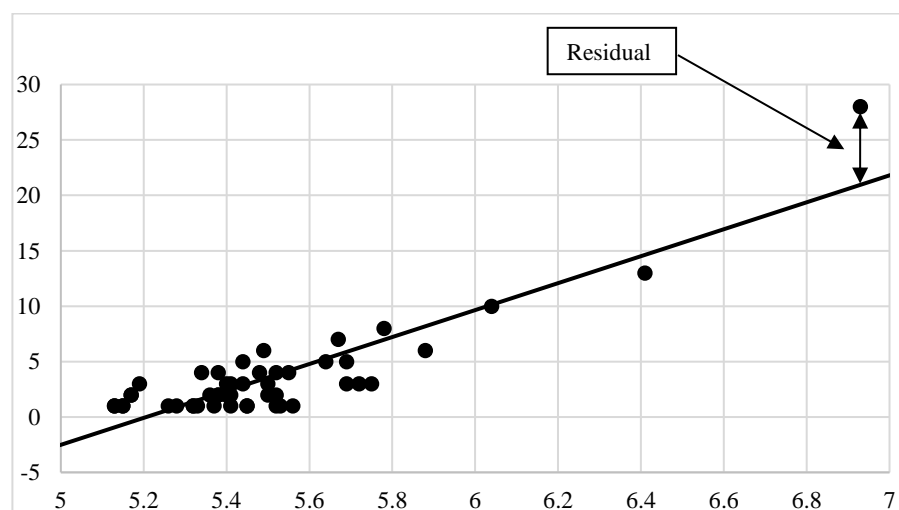
City	National Venue(s)	Bonus Weighting
London	Wembley; Twickenham; Lords; Olympic Stadium	1.80
Manchester	Old Trafford; Etihad Arena	1.40
Cardiff	Millennium Stadium	1.20
Glasgow	Hampden Park	1.20
Edinburgh	Murrayfield	1.20
Belfast	Windsor Park	1.20
Newcastle	St James Park	1.20
Birmingham	Villa Park	1.20
Leicester	King Power Stadium	1.20
Brighton	Community Stadium	1.20
Milton Keynes	Stadium MK	1.20
Gloucester	Kingsholm Stadium	1.20
Exeter	Sandy Park	1.20
Leeds	Elland Road	1.20

Note: All other cities bonus weighted as 1.

Choice (★ ★)

In the focus groups, the range of available professional sports clubs emerged as a strong theme in 2015. We therefore measured choice as the population adjusted number of professional football, rugby union, rugby league, and cricket clubs in each city. To adjust for population, we regressed the aggregate number of professional sports clubs in each city on its population to arrive at an expected number of clubs for any given population size (i.e., the regression line or line of best fit). We then took the residual for each city (i.e., the difference between the expected number of clubs and the actual number of clubs) to provide an estimate of whether a city has more (positive residual) or less (negative residual) professional clubs than should be expected for its size. This regression-based approach to population adjustment is visualized in Figure 1.

Figure 1. Relationship between city population and aggregate number of professional clubs



Sporting History (★ ★)

According to the fan focus groups in 2015, sporting history was a key factor in what constitutes a great sporting city. To measure this factor, we retrieved data on the major trophy haul of each of the professional clubs in each city and averaged these to provide an indication of historical success per city. We define a major trophy as league trophies for the top division of each respective sport (i.e., football, rugby union, rugby league, and cricket) and any domestic cups that are nationally competitive (e.g., FA Cup, LV Cup, Challenge Cup, etc.). We also retrieved data on major European and International trophies in football, rugby union, rugby league and cricket (e.g., Champions League, Heineken Cup, World Club Series, etc.). As with the club success factor, the data contained various levels of competition within sports (i.e., Premier League and League Cup). It was thus necessary to weight the average historical trophy haul according to their relative esteem (so a Champions League trophy is worth more than a League Cup). The weighted average of the aggregate historical trophy haul of the clubs in a given city served as the sporting history factor. The trophy weightings are displayed in Table 7.

Table 7. Trophy weightings for the sporting history factor

Trophy	Weighting
Champions League (Football)	2.50
Women's Champions League (Football)	2.50
Heineken Cup (Rugby Union)	2.50
World Club Series (Rugby League)	2.50
Other European (Football)	2.25
Other European (Rugby Union)	2.25
English Premier League (Football)	2.00
Women's English Premier League (Football)	2.00
Celtic Pro 12 (Rugby Union)	2.00
English Premiership (Rugby Union)	2.00
Super League (Rugby League)	2.00
County Championship One (Cricket)	2.00
T20 Blast (Cricket)	2.00
English FA Cup (Football)	1.75
LV Cup (Rugby Union)	1.75
Challenge Cup (Rugby League)	1.75
English League Cup (Football)	1.50
Scottish Premier League (Football)	1.25
Scottish Cup (Football)	1.00
Scottish League Cup (Football)	1.00

Economic Impact (★)

The final theme to emerge from the qualitative analysis of the fan focus groups in 2015 was the

economic impact of sport. We therefore retrieved data on the percentage of the overall workforce employed in the sports industry for each city with data compiled by Sport England (Economic Value of Sport – Local Model, November 2015) from the Business Register and Employment Survey (BRES, 2013) and the Scottish Household Survey (SHS, 2013). The Scottish and Welsh data was unavailable for the regions of Cardiff, Swansea, Aberdeen, Dundee, and Edinburgh. As such, the overall Welsh average was used for Cardiff and Swansea and the overall Scottish average employed for Aberdeen, Dundee, and Edinburgh.

Stage 5. Composite analysis and overall ranking

Once the weightings were assigned, and the measurement complete, the process of weighted-ranking could begin. This process comprised four stages:

- 1) We collected the raw data about the factors for each city and placed it in a database.
- 2) Since the data differed qualitatively from factor to factor, we transformed the raw data onto a standardised 100 point scale. To do this, we applied a transformation formula; $100 * (x - \min) / (\max - \min)$ where x is the value of the raw data, \min reflects the minimum raw value, and \max reflects the maximum raw value. Once the data was transformed, each raw data point for each factor conformed to a uniform scale and was therefore interpretable. For example, if city x takes a score of 57 for the *transport* factor then, when transformed, 57% of the cities in the dataset fall below city x on the *transport* factor.
- 3) The transformed score was subsequently weighted by multiplying it by a coefficient that corresponded to the weighting assigned from the aforementioned survey analysis (see Table 3).
- 4) The transformed and weighted scores for all factors were then added together to form an overall total for each city. These totals were then used to rank the cities.

This process is schematised in Table 4:

Table 4. Hypothetical score calculation for city x

Factor	Weight	Raw data	Transformed score	Coefficient	Transformed and weighted factor score
Value for money	60%	0.05	100	.60	60
Club Success	30%	4.2	74	.30	22.2
Choice	10%	0.000009	22	.10	2.2
Total	100%			1.0	84.4

4. KEY FINDINGS

Key Finding 1: Leicester places 1st overall and is the top East and East Midlands city

Leicester emerged as ESPN's Greatest Sporting City 2015, rising 17 places from 18th in 2015. This achievement owed much to the incredible performance of the city's football team, Leicester City, in winning the Premier League. Leicester's Rugby team, the Leicester Tigers, similarly had a good season and collectively these performance meant that Leicester finished top in the results/success factor. Relatedly, fan satisfaction was also extremely high, with Leicester finishing top in 4 of the 5 subjective factors where fan perceptions were solicited (*viz. local talent, atmosphere, community, and social/match day experience*). The performance of Leicester is very much commensurate with the big sporting story of 2016 – that of the success of the city's football team. This success seems to have very much over spilled into general satisfaction with the city's sporting performances. Even more impressively, its overall performance ensured the city had enough to beat a number of city powerhouses in sport, those of London, Manchester, Liverpool, and Glasgow, into 3rd, 2nd, 4th and 6th place respectively.

In the East and East Midlands region, Leicester were the outlier as the only city in the top 10 overall. Nottingham placed 12th (up 8 from 2015), Northampton placed 17th (up 16 from 2015), Derby finished 22nd (down 14 from 2015), Ipswich finished 36th (down 11 from 2015), Milton Keynes placed 38th (down 23 from 2015), Norwich finished 42nd (down 14 from 2015), and Peterborough placed 45th (down 8 from 2015).

Key Finding 2: Glasgow top Scottish city

Glasgow emerged as the top Scottish sporting city in our analysis for the second year running, ranking 6th overall. This should come as no surprise given the dominance of Celtic and Rangers

football clubs meaning that Glasgow is rich in sporting history (and indeed finished top on this factor). Interestingly, Glasgow scored bottom on participation and did poorly for economic impact – with the other Scottish cities outperforming Glasgow on these factors. Beating Glasgow is always going to be a tough task, however, Edinburgh ranked a respectable 8th – one place up from 9th the previous year. Dundee and Aberdeen did less well at 28th and 32nd respectively (although Aberdeen rose an impressive 6 places from 2015).

Key Finding 3: Cardiff top Welsh city

Cardiff was the top Welsh city, ranking 7th overall, up 3 places from 2015. Not surprisingly, Cardiff's top ten finished owed a lot to its high score on venues (1st overall). It also ranked inside the top quarter of cities on participation and value for money. Interestingly, Cardiff's close rival Swansea emerged in 37th place. Swansea had very high fan satisfaction on the subjective factors, but performed in the bottom 15% on choice, history, and venues. It also finished near the bottom on value for money, largely because of the £35 cheapest adult ticket at Swansea City FC.

Key Finding 4: Leeds finishes top in the North and North East

Leeds emerges as the top city in the North and North East region placing 5th overall (no change from 2015). Leeds' performance was largely a function of the very good recent results of Leeds Rhinos (winners of the Challenge Cup and Super League) and Yorkshire County Cricket Club (winners of the County Championship). The city also performed well on its value for money, choice, and sporting history.

Another notable result from the North and North East region was that Newcastle pipped Sunderland who finished 9th and 10th respectively. A surprising finding since Sunderland football club stayed in the Premier League in 2016 at the expense of Newcastle United. However, Newcastle performed better than Sunderland this year on economic impact, participation, and venues, meaning it just squeezed 0.40 points ahead of its North East rival. In this region, Sheffield, Middlesbrough, Hull, Doncaster, Barnsley, Bradford and York ranked 18th, 20th, 24th, 27th, 31st, 39th, and 48th respectively.

Key Finding 5: Manchester top North West city for second year running

Manchester placed 2nd overall (down 1 from 2015) and finished as the best sporting city in the North West for the second year running. This achievement owed much to its consistent performance, where it placed in the top quarter of cities for 7 of the 12 factors. It also finished

top for the transport factor. The performance is commensurate with the sporting reputation of Manchester, which houses two of the top English football teams (Manchester City and Manchester United) who both won domestic trophies in 2016, and a number of successful Rugby clubs (Sale, Widnes, and St Helens). Its overall performance ensured the city had just enough to squeeze the other ‘big’ sporting city, Liverpool, into 2nd place in the North West and 4th overall (up 2 from 2015). Wigan did exceptionally well, finishing 3rd in the North West and 15th overall (up 16 from 2015) due in large part to the good form of Wigan Warriors in 2016. Blackburn, Preston, Bolton, and Blackpool finished 30th, 33rd, 44th, and 49th respectively.

Key Finding 6: Birmingham ranks 13th but top city in the West Midlands

England’s second city, Birmingham, emerged from our analysis in what might be considered a disappointing 13th place. Though this is up 4 places from 2015, fan satisfaction with the city was modest and it hovered around mid-table for the fan survey factors (viz. local talent, atmosphere, community, transport, and social). In addition, the city performed poorly on the economic impact, participation, and success factors (bottom 3rd of cities). The good news for Birmingham is that it performed strongly on value for money (top 30%), and had a solid rank for history (6th overall), so with improved fortunes for the success of its clubs there is no reason why it cannot break into the top 10 in future years. Coventry and Stoke-on-Trent finished 34th and 35th respectively both up on their performances in 2015 (43rd and 46th respectively).

Key Finding 7: London top city in the South and South East

The Capital, London, placed 3rd in this year’s ranking – 1 place lower than in 2015. Its professional clubs continued to perform well in history and recent success. However, it scored poorly on choice and venues (both adjusted for population size). Nonetheless, London still finished as the top city in the South and South East for the second year running. In this region, Southampton also placed highly at 11, up 3 places from 2015. Brighton and Portsmouth also placed inside the top 20 at 14th and 19th respectively. Oxford, the most active city in our analysis (1st for participation) finished 21st up 19 places from 2015. Reading, Bournemouth, and Luton complete our list of South and South East cities finishing in 29th, 46th, and 47th respectively.

Key Finding 8: Bristol best in South West but no cities in top 15

A disappointing year for the South West with no cities making the top 15. Bristol was the best South West city, finishing 16th, 9 places lower than in 2015. This was primarily due to the

relative lack of success for the professional sports clubs in the city compared to last year (Bristol ranked top on success in 2015). In fact, all cities in the South West moved down in this year's ranking. Gloucester fell 11 places to 23rd, Plymouth fell 10 places to 40th, Bath fell 20 places to 41st and Swindon fell 2 places to 43rd. The new city entry to this year's ranking, Exeter, finished a respectable 26th scoring highly on value, economic impact, and community.

Key Finding 9: Blackpool finishes bottom

Blackpool emerged from our analysis as the bottom placed city for the second year in a row. This poor showing was largely due to high levels of fan dissatisfaction displayed by the survey factors (bottom in all but 2). Blackpool also scored poorly on choice, history, value for money, and success. This might be largely attributed to the unrest around the city's only professional sports club, Blackpool FC, who have endured another torrid season both on and off the pitch. Clearly, there is much work to be done if Blackpool is to rebuild its sporting reputation.

Key Finding 10: Leicester top football city

When the data were split by sport, Leicester finished the year as the top football city. This is perhaps unsurprising given the success of Leicester City in winning the Premier League title. The other big football cities of Manchester, Glasgow, and Liverpool follow close behind, Blackpool finished bottom for football.

Key Finding 11: Leeds top cricket city

The success of Yorkshire County Cricket Club in 2016 (County Champions) ensured that Leeds was the top cricket city of 2016. The other big cricket cities of Manchester and London follow close behind, with Northampton finishing bottom.

Key Finding 12: Cardiff top rugby union city

Cardiff emerged in our analysis as the top rugby union city of 2016. The national venue in Cardiff (Millennium Stadium) ensured that the city scored well on atmosphere (1st) and social/match day experience (1st). Cardiff Blues also offer very good value for money and the fan appreciated the club's emphasis on local talent. London finished close behind in 2nd for Rugby Union, owing largely to the success of Saracens (European Rugby Champions Cup and Aviva Premiership winners). Reading, home to London Irish, finished as the bottom rugby union city.

Key Finding 13: Leeds top rugby league city

Leeds placed as the top rugby league city in 2016. This was mainly due to the success of Leeds Rhinos, who won the Super League and Challenge cup. The recent good form of Wigan Warriors ensured that Wigan were not far behind in second place. Doncaster was the lowest placed rugby union city.

Key Finding 14: Specific factor accolades

Alongside the overall headline findings, there were some interesting specific factor accolades. Most notably, Leicester finished 1st on 5 of the 12 factors – reflecting its excellent year in football and rugby. Manchester finished top only on fan satisfaction with transport links (but performed well on most factors). Oxford scored highest on adult sports participation with 48% of its population participating in sport at least once a week. In another interesting finding, Norwich finished highest on economic impact with 1.48% of its workforce employed in the sports industry. Liverpool emerged as the city with the most sporting choice, with 6 professional sports clubs servicing the city. The venues factor was won by Cardiff for the second year running as was the history factor won for the second year running by Glasgow. Finally, Derby won the value for money factor for the second year in a row as Derby County continues to offer excellent value for money to its fans. The individual factor accolades are listed below:

- (1) Local talent: Leicester highest (1st overall ranking).
- (2) Atmosphere: Leicester highest (1st overall ranking).
- (3) Community: Leicester highest (1st overall ranking).
- (4) Transport: Manchester highest (2nd overall ranking).
- (5) Social: Leicester highest (1st overall ranking).
- (6) Economic impact: Norwich highest (42nd overall ranking).
- (7) Participation: Oxford highest (21st overall ranking).
- (8) Choice: Liverpool highest (4th overall ranking).
- (9) Success: Leicester highest (1st overall ranking).
- (10) Venues: Cardiff highest (7th overall ranking).
- (11) History: Glasgow highest (6th overall ranking).
- (12) Value for money: Derby highest (22nd overall ranking).

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